

PROJECT SUMMARY AND ENVIRONMENTAL ANALYSIS FOR THE
PROPOSED OUTAGAMIE COUNTY NORTHWEST LANDFILL

Proposed Facility: This proposed project consists of a noncontiguous expansion (Monitoring #4804) of the currently operating Outagamie County Northeast Area 6 (Northeast) landfill (Lic. No. 3235), and two closed landfills known as the East and West landfills (Lic. No. 2484), located on the same property (the Facility). The proposed expansion would be named the Outagamie County Northwest landfill (NWLF).

Authorized Contacts:

Mr. Brian Van Straten
Director of Solid Waste
Outagamie County Recycling & Solid Waste Department
1419 Holland Road
Appleton, WI 54911-8985
Phone: (920) 832-1521
Brian.VanStraten@outagamie.org

Christopher Anderson, P.E.
Project Manager
Foth Infrastructure & Environment, LLC
2121 Innovation Court, Suite 300
Green Bay, WI 54115-5126
Phone: (920) 497-2500
Chris.Anderson@Foth.com

Licensee/Property Owner:

Outagamie County Recycling & Solid Waste Department

Site Location, Acreage, Capacity, Site Life and Access

The Outagamie County Recycling and Solid Waste Department (Outagamie County) has submitted a feasibility report for a proposed 80.7-acre, noncontiguous landfill expansion at the Facility. The proposed NWLF, if approved, would be located on a 450-acre parcel presently owned by Outagamie County, which contains the currently operating Northeast landfill and two closed landfills (East and West landfills). The property is located in the S ½ of NW ¼ and the NW ¼ of SW ¼ of Section 17, T21N, R18E, village of Little Chute, Outagamie County, Wisconsin and has an address of 1419 Holland Road, Appleton, WI 54911-8985. Access to the NWLF would continue to be from Northland Avenue (CTH OO) to Holland Road, where a gate and fence currently control access to the property.

The proposed design capacity for the NWLF is approximately 12,165,000 cubic yards (including waste, daily and intermediate cover, but excluding final cover), with an estimated active site life of 11 to 13 years. The site life was determined by applying an average waste generation rate for the state of Wisconsin to the population that would be served by the NWLF. The waste generation rate for the state of Wisconsin was estimated using the Wisconsin Department of Natural Resources (department) Landfill Tonnage Reports for 2015, 2016, and 2017. These estimates and measured amounts accepted at the Northeast landfill indicate the Northeast landfill is currently accepting approximately 700,000 tons per year, with an average density of 1,650 lbs/cubic yard. This is projected to increase over time due to projected increases in population within the landfill service area.

OUTAGAMIE COUNTY NORTHWEST LANDFILL PROJECT SUMMARY AND ENVIRONMENTAL ANALYSIS

Primary Service Area

The primary service area will include the entire geographical boundary of Outagamie, Brown, and Winnebago Counties (BOW) and the municipalities located within those counties. BOW has a 25-year (unless extended) disposal and recycling agreement (Agreement) which was established in 2003. The Agreement consists of establishing a single regional landfill within one of the three counties that services all three counties at one time. Waste disposal within the BOW is currently at the Northeast landfill. The Agreement stipulates disposal will transition to the proposed Brown County South landfill (SLF) when the Northeast landfill reaches capacity. BOW is currently evaluating the Agreement to determine the best course of action through the 25-year Agreement period, which includes evaluating if the NWLF should be the next regional landfill.

Proposed Waste Types and Leachate Characteristics

Currently the Northeast landfill accepts municipal solid waste (MSW), industrial waste, construction & demolition (C&D) waste, and special waste streams. The NWLF would receive the same waste streams as the Northeast landfill. The approximate breakdown of anticipated annual waste acceptance is (note percentages are based on waste volume):

- Municipal Solid Waste: 80% (450,000 tons)
- Industrial Waste: 11% (111,000 tons)
- Construction & Demolition Waste: 4% (20,000 tons)
- Other or Special wastes: 10.2% (115,000 tons)

Special wastes are wastes that require prior review or special handling. They may be non-municipal solid waste type wastes that are not disposed of on a recurring basis or that require special handling at the landfill. Presently Outagamie County uses a Special Waste Acceptance Plan as a screening procedure to determine if the waste is suitable for disposal. The same special waste approval procedure is proposed for the NWLF.

The chemical characteristics of the leachate produced within the site are expected to be similar to leachate from the active Northeast landfill since the waste types accepted at the NWLF is expected to be similar. Outagamie County currently has leachate treatment agreements with Heart of the Valley Metropolitan Sewerage District (HVMSD) for the Northeast landfill and city of Appleton Wastewater Treatment Plant (WWTP) for the East and West landfills. Letter requests were submitted to both the HVMSD and the city of Appleton WWTP to evaluate their ability to treat the leachate from the NWLF. The primary method for leachate disposal for the NWLF will be treatment at city of Appleton WWTP. The alternate method of leachate disposal will be treatment at the HVMSD. Leachate from the closed Northeast, East, and West Landfills will not be combined with the NWLF, and therefore, will continue to be treated as described above.

Local Approvals

Affected municipalities, as defined under s. 289.01(1), Wis. Stats., in the area of the NWLF, include the city of Appleton, town of Grand Chute, village of Little Chute, and Outagamie County. Notifications to the affected municipalities regarding the NWLF were sent out on December 15, 2017. Copies of the notification letters and responses from the affected municipalities are included in Appendix D of the feasibility report and Attachment 5 in Addendum No. 1 of the feasibility report. The village of Little Chute responded with a letter indicating the landfill operation will require a

OUTAGAMIE COUNTY NORTHWEST LANDFILL PROJECT SUMMARY AND ENVIRONMENTAL ANALYSIS

conditional use application. The conditional use permit application was submitted to the village in September of 2018 and is included in Appendix E of the feasibility report.

Feasibility Determination

Before landfill construction the department must first determine if the proposed landfill is feasible. Outagamie County has submitted a feasibility report and an addendum to the feasibility report for the NWLF. The feasibility report and addendum contain the information required in ch. NR 512, Wis. Adm. Code. The department will issue a feasibility determination, based on the information contained in the feasibility report, the department's files, comments received, knowledge of the site through inspections and the requirements of chs. NR 500-538, Wis. Adm. Code.

Plan of Operation Approval, Proof of Owner Financial Responsibility and a License

If the department determines that the NWLF is feasible, then Outagamie County would submit a plan of operation report to the department for review. If the department approves the plan of operation report, then Outagamie County may construct the first phase of the landfill and submit an application for a solid waste disposal license and proof of owner financial responsibility for landfill closure and long-term care. Outagamie County must provide proof of owner financial responsibility for long-term care as specified in ch. NR 520, Wis. Adm. Code, for at least 40 years after site closure. Even though financial assurance is required for 40 years after closure, Outagamie County would be responsible for the long-term care and any negative environmental impact the landfill may cause in perpetuity.

Construction Documentation Approval

Before waste placement in each new area of liner and following final cover construction, Outagamie County would need to obtain construction documentation approval from the department under ch. NR 516, Wis. Adm. Code.

Administrative Code Exemptions Requested

Outagamie County has requested exemptions from the following Wisconsin Administrative Code requirements:

- An Alternative Geotechnical Investigation (AGI), as outlined in s. NR 512.085, Wis. Adm. Code, was requested by Outagamie County for the NWLF. The AGI proposed to use information from previously installed soil borings and groundwater monitoring wells at the site to meet the minimum geotechnical information requirements of s. NR 512.09, Wis. Adm. Code. The AGI was accepted by the department in a letter dated August 1, 2017.
- An exemption to s. NR 504.04 (3)(f), Wis. Adm. Code, is requested to the 1,200-foot setback distance for 5 private water supply wells that are located within 1,200 feet of the proposed NWLF limits of waste.
- An exemption to s. 507.14(3)(b), Wis. Adm. Code, is requested for borings collected in 2017 that were converted to monitoring wells. The boring logs have groundwater level measurements recorded from the first round of groundwater sampling (November 2017), rather than at the time of drilling. The groundwater measured at the time of drilling was not reported on the boring log because the groundwater elevations were not stable due to the clay stratigraphy the wells are screened within.

OUTAGAMIE COUNTY NORTHWEST LANDFILL
PROJECT SUMMARY AND ENVIRONMENTAL ANALYSIS

- Exemptions are requested to ss. NR 512.11(2)(d) and NR 512.11(3), Wis. Adm. Code. Section NR 512.11(2)(d), Wis. Adm. Code, requires a line representing the water table to be drawn on cross sections that depict 2 or more observations wells, and s. NR 512.11(3), Wis. Adm. Code, requires preparation of water table contour maps. Water table lines were not drawn on the cross sections and water table contour maps were not produced due to the presence of discontinuous silt and sand lenses within Unit A and the very low permeability of the tight clays within Unit B, which result in locally saturated and unsaturated conditions. Water levels measured produce an irregular water level surface that is difficult to interpret.
- An exemption is requested to s. NR 504.04.04(3)(d), Wis. Adm. Code, to allow the NWLF to be within 1,000 feet of a state or federal highway. The proposed NWLF is within 1,000 feet of Highway 41 and Wisconsin Highway 441.
- Exemptions are requested for several aspects of ss. NR 512.15 and NR 504.075, Wis. Adm. Code, which requires documentation of a soil borrow source. All of the soil required for construction of NWLF (with the exception of material purchased from a commercial source) will be obtained from the footprint of the NWLF. Soils within the NWLF footprint were not characterized in full compliance with s. NR 504.075(5), Wis. Adm. Code, which specifies the number of tests pits or borings that need to be completed; however, information collected during the alternative geotechnical program (AGP) indicated the major soil units identified by previous subsurface investigations for the development of the existing landfills (Northeast, East, and West landfills) are consistent with the material beneath the NWLF. Outagamie County proposes to use borings from other areas across the Facility to demonstrate the material excavated from the NWLF will meet the minimum characteristic requirements for clay liner specified in s. NR 504.06(2), Wis. Adm. Code.
- An exemption is requested from s. NR 512.11(1), Wis. Adm. Code, which requires a minimum scale of 1" = 200' for the existing site conditions map. Due to the size of the proposed NWLF, it is not possible to show the complete area 1,500 feet from the proposed waste limits on a 24" x 36" plan sheet at a scale of 1" = 200'. The scale was adjusted to show the entire area on one plan sheet.
- An exemption is requested to s. NR 512.12(1), Wis. Adm. Code, which requires leach testing of high-volume industrial waste anticipated to individually constitute more than 5% of the total proposed design capacity. Outagamie currently accepts papermill sludge from 9 sources, which combined, represent greater than 5% of the total proposed design capacity. Outagamie County provided recent leach test data and further information regarding the physical and chemical characteristics of the waste. Therefore, an exemption should not be necessary.
- Chapter NR 140, Wis. Adm. Code establishes groundwater quality standards for a list of substances that need to be met at their designated point of standards application for the landfill. Each listed substance has an established enforcement standard (ES) and a preventive action limit (PAL). Section NR 140.28(1), Wis. Adm. Code, indicates the department may not approve a proposed facility at a location where a PAL or ES has been attained or exceeded unless an exemption has been granted. Sections NR 140.28(2) through (4), Wis. Adm. Code, prescribe the criteria for granting exemptions where background concentrations of substances exceed their respective standards.

OUTAGAMIE COUNTY NORTHWEST LANDFILL PROJECT SUMMARY AND ENVIRONMENTAL ANALYSIS

In accordance with s. NR 507.29, Wis. Adm. Code, and as specified in s. NR 140.28, Wis. Adm. Code, exemptions were requested for several inorganic substances and monitoring locations at the proposed NWLF (see Attachment 2 of Addendum No. 1 of the feasibility report).

The department has also requested Outagamie County review volatile organic compounds (VOCs) detected during baseline monitoring of the NWLF to evaluate the need for exemptions to ch. NR 140 groundwater quality standards for VOCs.

As review of the feasibility report continues, the department is continuing to evaluate the need for the exemptions requested and the department has requested additional information to evaluate the exemptions needed.

Surface Waters and Wetlands

The NWLF is not anticipated to have a significant adverse impact on surface water, as there are no navigable lakes, ponds, or flowages in close proximity (within 1,000 feet) of the NWLF. An intermittent stream was identified within the NWLF waste footprint. However, a navigability determination was made for the intermittent stream on April 5, 2017 and the stream was determined to be non-navigable. Documentation of the navigability determination is provided in Appendix B-4 of the feasibility report.

The proposed NWLF will include a surface water management system that will control surface water runoff. The design includes surface water control structures including drainage swales and downslope channels on the final cover, as well as perimeter ditches to control surface water flow and erosion. The eastern portion of the NWLF will drain to the southeast and into a storm sewer network that ultimately drains to the existing Sedimentation Pond 1. Sedimentation Pond 1 was designed to retain water under normal conditions for visual aesthetics. Water from Sedimentation Pond 1 is released only during or after precipitation events and drains into the village of Little Chute storm water sewer system.

The remaining portions of the proposed NWLF will drain surface water to the south via perimeter ditches and ultimately discharge into the proposed Sedimentation Pond 3. Pond 3 will then discharge via a ditch to the existing Sedimentation Pond 2 (located at the southwest corner of the property and currently collects flow from the West landfill), which ultimately discharges to an existing drainage swale to the south of the pond and eventually flows to the Fox River via an unnamed tributary.

Development of the NWLF is not anticipated to change the existing discharge from the facility, as the storm water management system will maintain the existing discharge points to the Garners Creek-Fox River sub-watershed. Although a majority of the NWLF occupies the Apple Creek sub-watershed, the intermittent stream within the footprint, which previously drained to the Apple Creek sub-watershed is no longer hydraulically connected to Apple Creek as a result of development north of the NWLF. Therefore, development of the NWLF is not anticipated to impact drainage patterns to the Apple Creek sub-watershed.

Wetlands were delineated within the NWLF. The existing wetlands are shown on Figure 7-4 in the feasibility report. Three of the wetlands and portions of additional wetlands identified on the property were determined by the department to be exempt from state regulation (see Appendix F of the feasibility report). The proposed NWLF will have an unavoidable impact to a total of 4.22 acres of non-exempt wetlands. Wetland fill permit applications, including a Practicable Alternatives Analysis

OUTAGAMIE COUNTY NORTHWEST LANDFILL PROJECT SUMMARY AND ENVIRONMENTAL ANALYSIS

(PAA) were submitted to the department and the United States Army Corps of Engineers (USACE) on March 20, 2018. The department issued a permit on October 17, 2018.

Outagamie County will mitigate the wetland impact through the purchase of wetland credits from the Wisconsin Wetland Conservation Trust In-Lieu Fee Mitigation Program and the Wolf River Wetland Bank. A total of 2.36 wet meadow credits (1.2:1 mitigation ratio) will be purchased from the Wolf River Mitigation Bank, and a total of 3.28 credits (1.45:1 mitigation ratio) for temporal loss will be purchased from the Wisconsin Wetland Conservation Trust In-Lieu Fee Mitigation Program.

Storm Water Discharge Permit

In accordance with s. NR 216.21(2)(b)7, Wis. Adm. Code, of Subchapter II-Industrial Storm Water Discharge Permits, Outagamie County would need to maintain a Tier 2 industrial general storm water discharge permit during construction and operation of the landfill and for ancillary construction activities such as clay borrow, soil berm, support facility and road construction. Outagamie County has already obtained coverage under the Wisconsin Pollutant Discharge Elimination System (WPDES) Tier 2 Industrial Storm Water General Permit (FIN57849) and has developed a storm water pollution prevention plan (SWPPP) for the facility. The permit SWPPP would need to be amended to include the NWLF under the existing permit. A separate construction permit would not be needed.

The SWPPP amendment would contain a description of the new activities that contribute to the increased pollutant loading, planned source control activities that would be used to control pollutant loads, an estimate of the new or increased discharge of pollutants following treatment, and when appropriate, a description of the effect of the new or increased discharge on existing storm water treatment facilities.

Monitoring requirements will be specified in s. NR 216.28, Wis. Adm. Code, and the Tier 2 Industrial Storm Water permit. The SWPPP would include a checklist of inspections to be made during the annual facility site inspection required by s. NR 216.28(2), Wis. Adm. Code. The SWPPP would also identify for each outfall the type of monitoring that would be conducted, such as non-storm discharge monitoring and storm water discharge quality inspections. The current Tier 2 Industrial Site Storm Water WPDES Discharge Permit requires visual evaluation of non-storm water and storm water discharges. In addition, the department will request that total phosphorus be included in proposed sampling in addition to Total Suspended Solids (TSS) because the landfill is located in the Lower Fox Total Maximum Daily Load (TMDL) area.

Section NR 506.07(2), Wis. Adm. Code, requires that landfills are designed, constructed and maintained in accordance with the applicable requirements of s. NR 504.09(1), Wis. Adm. Code, and the technical standards developed under sub. Ch. V of ch. NR 151, Wis. Adm. Code, to control sediment movement offsite. The Technical Standards 1001 and 1064 for construction sites require an 80% reduction in sediment load, based on the dominant soil type used at the site, which is clay for landfill liner and final cover.

Air Pollution Control Permits

The Solid Waste Facility currently operates under Air Pollution Control Operation Permit No. 445012370-P21. To control emissions of VOCs and certain hazardous air pollutants (e.g. – bromodichloromethane, perchloroethylene, and vinyl chloride), the permit requires Outagamie County to operate a landfill gas collection system and to route the collected gas to an open flare per the requirements of ch. NR 445, Wis. Adm. Code (Wisconsin's Air Toxics Rule).

OUTAGAMIE COUNTY NORTHWEST LANDFILL PROJECT SUMMARY AND ENVIRONMENTAL ANALYSIS

Before beginning construction on the expansion, Outagamie County would be required to apply for and be issued an Air Pollution Control Construction Permit from the department in accordance with s. 285.60(1)(a), Wis. Stats. The construction permit application would also act as an application for a revision to its Air Pollution Control Operational Permit. The facility would need to control its air emissions in accordance with applicable state and federal regulations.

Federal New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAP) for Municipal Solid Waste Landfills would be included in the construction permit and operation permit revision, as applicable. State hazardous air pollution regulations in ch. NR 445, Wis. Adm. Code, may apply to emissions from equipment not covered under the NSPS and NESHAP.

Present Land Use and Zoning

The proposed NWLF will be constructed on a 450-acre parcel owned by Outagamie County. Approximately 414 acres of the 450-acre parcel are used by the Outagamie County Solid Waste Facility, which includes the active Northeast landfill, closed East and West landfills, and the proposed NWLF. The proposed NWLF area is approximately 80.7 acres and is located on the northwest corner of the property. The remainder of the 450-acre parcel is used by Outagamie County for other purposes. Approximately 19 acres on the southeast corner of the property are used by the Outagamie County Highway Department, and approximately 17 acres are used for a county-operated dog park located on the southwest corner of the property.

The property is located within the village of Little Chute. The west half of the property was previously within the town of Grand Chute; however, the village of Little Chute annexed the western half of the property so that the entire property would reside in the village of Little Chute. The entire property is zoned as industrial and a conditional use permit is required by the village of Little Chute to use the property for NWLF operations. The proposed NWLF area is currently open space used for soil stockpiling and other county storage needs.

Immediately adjacent to and within a 1-mile radius of Outagamie County property the land use and zoning is under the jurisdiction of several municipalities are as follows:

Village of Little Chute – the area to the south of the property is primarily single-family residential with smaller areas of industrial, commercial highway district, two-family residential and mobile home district. The area to the north of the property is commercial highway district, single and multi-family residential and general agriculture. The area to the east is a mix of commercial highway district, mobile home district, business and residential (single-family, two-family, and multi-family).

Town of Grand Chute – the area west of the property is a mix of commercial, general agriculture and industrial. The areas to the north of the property are general agriculture.

Town of Vandebroek – the areas within the town of Vandebroek are primarily zoned general agriculture with small areas of industrial.

City of Appleton – the areas to the west and southwest of the property are zoned industrial, commercial with a small parcel zoned as public institutional. Areas to the northwest are a mix of industrial, commercial, residential (single-family, two-family, and multi-family), public institutional and conservancy.

OUTAGAMIE COUNTY NORTHWEST LANDFILL PROJECT SUMMARY AND ENVIRONMENTAL ANALYSIS

City of Kimberly – the areas to the south of the property are a mix of industrial, commercial, residential (single-family, two-family, and multi-family) and central business district.

The NWLF is not expected to have a significant impact on land use in the area since the property is already used for landfill operations. Impacts the current landfill operations has on the surrounding property would remain the same.

Regional and Site-Specific Geology

The geology beneath the NWLF consists of a thick sequence of unconsolidated glacial deposits ranging in thickness from 60 to 80 feet overlying dolomite bedrock. Five distinct geologic units were encountered beneath the NWLF, which include (from ground surface down): the Glenmore Member, the Two Creeks Forest Bed (Two Creeks), the Lake Oshkosh Phase of the Kewaunee Formation; the undifferentiated Holy Hill Formation; and the undifferentiated Platteville-Galena Formations (bedrock) of the Sinipee Group. Each major geologic unit is described in more detail below:

Glenmore Member: The Glenmore Member consists of reddish brown to reddish gray fine-grained lean clay that represents subglacial till deposited by the retreating ice of the Lake Michigan and Green Bay Lobes of the Laurentide Ice Sheet. In some locations, a zone of silt and sand lenses occurs in the upper 20 feet or so, with lenses varying in lithology from predominantly silt (ML) to clayey sand (SC), silty sand (SM), well-graded sand (SW), and poorly-graded sand (SP). The Glenmore has an average thickness of 32 feet, and ranges in thickness from about 26 to 44 feet beneath the NWLF.

Two Creeks: The Two Creeks is a thin organic layer with peat and/or wood that accumulated as forest floor litter or in shallow ponds. The Two Creeks occurs at the base of the Glenmore Member at an average depth of approximately 32 feet. The average thickness of the peat layer is 0.4 feet with a maximum thickness of 1.7 feet and a minimum of 0.1 feet, where the peat layer is present.

Lake Oshkosh Phase: The Lake Oshkosh Phase occurs beneath the Two Creeks and consists of lacustrine deposits that formed as Glacial Lake Oshkosh transgressed and regressed subsequent to multiple episodes of retreat and advancement of the Laurentide Ice Sheet. These transgressions and regressions resulted in an interbedding of fine-grained till and lake sediments that are difficult to visually distinguish from one another. The unit consists of alternating layers of reddish-brown and grey-brown clay or silt. At the top of the unit, the red layers are thicker, and the grey layers are thin to absent with the grey layers becoming more predominant with depth and eventually blending in with the underlying undifferentiated Holy Hill Formation. The lacustrine unit has an average thickness of 29 feet beneath the proposed NWLF area, with a range of about 13 to 45 feet thick. The thickness of the varved lacustrine unit generally follows the trend in the bedrock, such that the top surface of the lacustrine unit is a relatively uniform elevation, and the unit becomes thickest where bedrock is the deepest.

Holy Hill Formation: The undifferentiated sediments of the Holy Hill Formation occur beneath the Lake Oshkosh phase and is the last unconsolidated unit before bedrock is encountered. The unit consists of subglacial till and supraglacial diamicton, disturbed lacustrine varved sediments, and fluvial sediments. The unit exhibits a high degree of grain-size variability across the site, but primarily consists of massive, reddish-brown to reddish-gray, stiff- to very-stiff sandy or gravelly lean clay or lean clay with gravel and/or sand. Lean clay with gradual transitions to silt, clayey sand and silty sand also occur. The unit contains several stiff undifferentiated lacustrine clay layers, and tills comprising silty sand, very dense clayey sand, and gravels and sands that are discontinuous. The unit ranges in thickness from about 29 feet to less than one foot, with an average thickness of 13 feet.

OUTAGAMIE COUNTY NORTHWEST LANDFILL PROJECT SUMMARY AND ENVIRONMENTAL ANALYSIS

Platteville-Galena Formation (bedrock): The dolomite bedrock beneath the glacial material consists of the undifferentiated Platteville-Galena Formations of the Sinnipee Group. The uppermost surface of the dolomite bedrock is fractured and weathered, and deeper bedrock is competent.

Regional and Site-Specific Hydrogeology

The geologic units beneath the NWLF can be grouped in four hydrostratigraphic units, each with unique groundwater transport and water quality characteristics that may be independent of the lithostratigraphic units. The four hydrostratigraphic units are referred to as the shallow (Unit A), intermediate (Unit B), deep (Unit C), and Unit D (deep bedrock). The uppermost hydrostratigraphic units (Units A and B) are both predominantly fine-grained soil units. Each unit is described in more detail below:

Unit A: Unit A consists of the approximately upper 20 to 30 feet of the Glenmore Member and is a fine-grained, predominantly clay soil with intermittent sand and silt lenses, and may be fractured and weathered near the surface causing a locally perched water table where more permeable features occur. Groundwater in Unit A occurs under unconfined and locally “perched” conditions. Water level measurements recorded from Unit A wells reflect the locations and depths at which soil saturation occurs within the clay or where perched groundwater conditions occur within coarse grained lenses in the unit.

Field hydraulic conductivity test results from Unit A indicates hydraulic conductivity within the unit varies across the NWLF area. Test results from Unit A had a geometric mean of 2.56×10^{-6} cm/s with values ranging from 4.63×10^{-8} to 1.03×10^{-4} cm/s.

Unit B: Unit B comprises the lower portion of the Glenmore Member along with the thin, intermittent Two Creeks peat layer and the underlying lacustrine clay unit (Lake Oshkosh). This unit is variably saturated, with some unsaturated zones, and is semi-confined. This unit has a very low permeability and contains many locally unsaturated and saturated zones.

Field hydraulic conductivity test results from Unit B indicates there is little variability within the unit across the NWLF area. Test results from Unit B had a geometric mean for the unit is 7.24×10^{-8} cm/s, and values ranged from 3.06×10^{-8} cm/s to 1.24×10^{-7} cm/s.

Unit C: Unit C is comprised of the uppermost 5 feet of fractured and weathered bedrock of the Platteville-Galena Formations and the undifferentiated Holy Hill Formation which consists of clayey till, clayey sand, gravel, cobbles, and clay. The undifferentiated Holy Hill Formation and the upper fractured/weathered bedrock are hydraulically connected, and act as a single hydrostratigraphic unit. Unit C is considered the uppermost aquifer in the area because it is composed of more transmissive sandy, gravelly material and there is a consistent piezometric surface measured in monitoring wells screened in the lower portion of this unit

Field hydraulic conductivity test results yielded a geometric mean of 1.26×10^{-3} cm/s, with values ranging from 9.54×10^{-7} to 1.1×10^{-1} cm/s. The observed difference in hydraulic conductivity between well locations is interpreted to reflect the occurrence and thickness of permeable layers/lenses within the unit and variations in the amount of fracturing developed in the dolomite bedrock at different areas of the site. Fine grained material intersects a portion of several well screen/filter pack intervals.

Unit D: Unit D is comprised of the unfractured and competent portion of dense microcrystalline dolomite of the undifferentiated Platteville-Galena Formations (Sinnipee Group). Unit D is relatively

OUTAGAMIE COUNTY NORTHWEST LANDFILL PROJECT SUMMARY AND ENVIRONMENTAL ANALYSIS

impermeable, with the exception of secondary fracturing. Unit D functions locally as an aquitard to the shallow groundwater flow system. No piezometers were installed in Unit D as part of the NWLF AGI because Unit D piezometers installed for the Northeast landfill have historically been dry or very low yielding.

Groundwater flow and gradients: Groundwater flow directions in the hydrostratigraphic Units A and B are difficult to evaluate due to the presence of discontinuous silt and sand lenses within Unit A and the very low permeability of the tight clays within Unit B, which result in locally saturated and unsaturated conditions. Water levels measured from the Unit A and B wells produce an irregular water level surface that is difficult to interpret. However, groundwater flow within Unit C can be evaluated and is generally toward the southeast, with local discharge along the Fox River where the formation outcrops. Horizontal hydraulic gradient in the unit is estimated to be approximately 0.023 feet/foot and average horizontal groundwater flow velocity ranges from 0.27 to 0.28 ft/day. These estimates were calculated using water levels representing high water conditions, which were measured in April 2018.

Water levels measured within nested wells indicate vertical gradients are downward from the ground surface down through Units A and B and into Unit C, where groundwater then flows to the southeast. Although there is potential for downward groundwater flow, the presence of low-permeability clays means any groundwater advection downward through Units A and B will be very slow. Unit C has a stronger horizontal hydraulic gradient due to the higher hydraulic conductivity, creating horizontal flow to the southeast across the NWLF site. Unit C may also have some vertical component of flow downward into competent bedrock.

Local, residential water supply wells typically draw water from the dolomite aquifer at depths of 200 feet or more. Large municipal water supplies are obtained from bedrock formations that are deeper than the Unit C dolomite (deeper sandstone or dolomite formations).

Baseline/Background Groundwater Quality

Four rounds of baseline sampling for the NWLF were sampled and analyzed for applicable parameters listed in ch. NR 507, Wis. Adm. Code, Appendix I, Tables 1, 2 and 3. Some monitoring wells that were installed previously already had some baseline monitoring requirements completed, as such, not all of the historical wells were subjected to all or a part of the baseline monitoring activities for the NWLF.

Four rounds of Public Health and Welfare parameters and two rounds of VOCs were collected at each well located outside of the proposed limits of fill as required by s. NR 512.09(4)(g), Wis. Adm. Code. Two additional rounds of VOCs were collected and analyzed for any wells with VOC detections during either of the first two rounds of sampling.

Metals samples were analyzed using Method 6010; however, the limits of detection (LOD) for some metals compounds using method 6010 are greater than the state of Wisconsin's ch. NR 140, Wis. Adm. Code, PAL and/or ES. There were several non-detect metals that had laboratory LODs that exceed the PAL and/or ES. Therefore, additional rounds of samples were analyzed for metals using Method 6020 with a detection limit that would meet the ch. NR 140, Wis. Adm. Code, PALs and ESs.

VOCs were detected in three monitoring wells (OW-117C, OW-1024A, and P-112C) at concentrations exceeding the PAL and/or ES during one or more baseline sampling events.

OUTAGAMIE COUNTY NORTHWEST LANDFILL PROJECT SUMMARY AND ENVIRONMENTAL ANALYSIS

Vinyl chloride was detected at hydrostratigraphic Unit A monitoring well OW-117C above the ES of 0.2 µg/L, and benzene was detected at hydrostratigraphic Unit A monitoring well OW-1024A above the PAL of 0.50 µg/L. These detections are thought to be anomalies because no other VOCs were detected at these wells during any of the four baseline events and vinyl chloride and benzene were not detected at each individual well during the other 3 baseline sampling rounds.

Tetrahydrofuran (THF) was detected at hydrostratigraphic Unit C monitoring well P-112C during each of the first four baseline sampling events, at concentrations exceeding the PAL of 10 µg/L but below the ES of 50 µg/L. THF has been detected during ongoing routine groundwater monitoring for the East and West Landfills at the other wells nested with this newly-installed Unit C monitoring well including Unit B (P-112D) and Unit D (P-112B) wells and has been attributed to glue used for construction of old monitoring wells installed in the 1970s and 1980s. Outagamie County has attributed the presence of THF detected at the newly-installed Unit C well P-112C to either the carry down of water during the drilling/well installation process through the Unit B zone known to contain THF in the groundwater; or to be an isolated area which may be affected by THF in leachate from the unlined West Landfill. The department has requested Outagamie County to further evaluate the source of THF near the 112 well nest.

Baseline monitoring detected elevated levels of antimony, arsenic, boron, chloride, lead, manganese, nitrate + nitrite, thallium, selenium, sulfate, and vanadium. Historical groundwater concentrations of arsenic, barium, cadmium, chloride, fluoride, iron, manganese, nitrate/nitrite, and sulfate have been detected at levels exceeding ch. NR 140, Wis. Adm. Code groundwater standards and were determined to be representative of background water quality reflecting natural groundwater conditions during the siting process for the Northeast Landfill.

Biological Impacts

Development of the 80.7-acre NWLF is expected to have few biological impacts.

Ponds, lakes and flowages that provide habitat for animals will not be directly impacted by development of the NWLF because none of these water bodies are directly connected or adjacent to the NWLF area. An intermittent stream was identified within the proposed NWLF footprint but was determined by the department to be non-navigable (see Appendix B of feasibility report).

As discussed previously, the proposed NWLF will have an unavoidable impact to a total of 4.22 acres of non-exempt wetlands. The wetlands that will be impacted provide some functional value related to stormwater storage, water quality (filtration), nutrient uptake, as well as limited wildlife habitat. On a small scale, the wetlands provide value to resident furbearers, songbirds, seasonal fish species, invertebrates, amphibians, arachnids, birds of prey, water fowl and other species. However, the narrow/channelized composition of the wetlands combined with their fragmentation and small size limits their positive functional value on a large-scale. The impacts caused by the NWLF will be offset by wetland mitigation credits that have been purchased, which will offer a much higher functional value that will be maintained in perpetuity.

The NWLF may have an impact on the two unnamed tributaries and wetland areas on the north and south end of the project boundaries. The two unnamed tributaries connect to the lower Fox River which offers potential for some gamefish species, particularly northern pike to make spawning runs up the tributaries and flooded wetland areas during the spring. Other gamefish species, including smallmouth bass may also use the tributaries for spawning and refuge areas for juvenile fish. Furthermore, erosion and runoff from the site may also impact the tributaries and Lower Fox River. These impacts will be limited by the surface water management system for the NWLF. Surface water

OUTAGAMIE COUNTY NORTHWEST LANDFILL PROJECT SUMMARY AND ENVIRONMENTAL ANALYSIS

drainage near the proposed operation will be controlled to minimize erosion and sedimentation. Surface water will be collected from the NWLF with drainage berms, channels, and pipes, and conveyed to a sedimentation pond before discharge from the site, which will minimize these affects. Overall, development is not expected to pose a major threat to gamefish species.

Mammals typically associated with urban areas (e.g., racoons and deer) and birds currently inhabiting the site will be temporarily displaced in areas of construction and will likely populate areas directly outside of the development area. Due to the open nature of landfills; garbage, food sources and contaminants may become accessible to mammals and birds that like to take advantage of the food availability. Nuisance situations can occur when gulls are attracted to the food source and roost or loaf on buildings within the property and the adjoining properties. The landfill property may also provide a protected area for large concentrations of roosting waterfowl, which can depredate crops or cause nuisance problem for adjoining landowners. Deer will also move off the property and create a higher potential for car-deer vehicle accidents and crop damage. However, following closure of the site many species that have left the site or been impacted by the development will likely populate the covered landfill area. As such, no significant long-term impact to mammal habitat is expected to result from the NWLF development.

A survey of threatened and endangered species was performed for the NWLF. Only one threatened/endangered species was identified within the NWLF project and surrounding area. In a letter dated August 16, 2016, the Bureau of Endangered Resources, concluded that based on the distance to known location of the species and the absence of suitable habitat in the project area, no impacts were anticipated.

No forestry concerns were identified in in the proposed NWLF area. The proposed NWLF area is almost entirely open field, with very few trees scattered individual trees. There were no concerns about the presence of old growth trees, or declining, rare or threatened tree species being present in the area. The proposed site will have minimal impact on the intrinsic value of the trees present.

Proposed Design

Development of the landfill will be in 5 phases. The general sequence of waste placement would begin in Phase 1 and continue into Phases 2, 3, 4, and 5, respectively. Phase 1 would provide screening to the south and west and would also provide control for blowing litter. Phases 2 and 3 would provide screening to the west and provide control of blowing litter. Phases 4 and 5 would be constructed last. Filling activities would be screened to the east and southeast by the Northeast and West landfills. Closure of the phases would be carried out in the same general progression as construction, i.e. starting with Phase 1 and progressing towards Phase 5.

The liner system of the NWLF would consist of a composite liner designed in accordance with s. NR 504.06, Wis. Adm. Code. The composite liner would consist of a 4-foot thick compacted clay layer overlain by a 60-mil textured high density polyethylene (HDPE) geomembrane. A 12 ounces per cubic yard (oz/yd²) non-woven geotextile and a 1-foot thick leachate collection system layer would lie over the geomembrane component of the liner. The composite liner functions as the primary containment system.

A minimum thickness of 25 feet of a fine-grained soil environment would be present below the proposed landfill subbase grades, which represent the bottom of the clay component of the composite liner. Elevations of the subbase excavation range from approximately 691 feet MSL in the southwest

OUTAGAMIE COUNTY NORTHWEST LANDFILL PROJECT SUMMARY AND ENVIRONMENTAL ANALYSIS

corner of Phase 3 to approximately 703 feet MSL in the southwest corner of Phase 1. Soil excavated in establishing subbase grade would be used in construction of the site or stockpiled.

The proposed base grades represent the top of a 4-foot clay and geomembrane composite liner, and range from approximately 695 feet to 707 feet MSL. The maximum slope for interior sidewalls of the NWLF would be 3H:1V from the landfill base to the top of the berm. Base grades would consist of an approximate 2 to 5% slope toward the leachate collection pipe with the drainage patterns in a herringbone configuration.

Leachate would be controlled via the leachate collection system designed in accordance with s. NR 504.06(5), Wis. Adm. Code. The leachate collection system would include a 1-foot thick coarse aggregate drainage layer placed over the composite liner and cushioning geotextile. The drainage layer would direct leachate to collection trenches consisting of a leachate collection pipe in a v-type trench. The leachate collection trenches would route leachate to leachate extraction sumps constructed at the low points in each phase. Submersible pumps would extract leachate from the sumps and discharge it to a double-encased gravity transfer pipe located along the perimeter berm. The transfer pipe would convey leachate to an underground storage tank located near the southeast corner of Phase 1. Submersible pumps in the storage tank would pump the leachate through a double-cased forcemain to a discharge point in a city of Appleton sanitary manhole. The city of Appleton WWTP is anticipated to be the primary leachate treatment plant for the NWLF. All leachate collection features outside the composite lined area would have a form of secondary containment in the event the primary containment is compromised.

Leachate recirculation is proposed for the NWLF and would be consistent with the existing recirculation plan for the Northeast Landfill. The current leachate recirculation plan includes recirculation activities in the form of a series of drain fields and by surface application.

Landfill gas produced by degradation of the waste mass would be extracted by a series of gas extraction wells. Landfill gas is proposed to be collected from the NWLF by a series of horizontal gas extraction wells via a network of pipe laterals and headers that route the landfill gas to either the existing co-generation facility or one of two flare units.

Landfill gas containment would be achieved by the composite liner and composite cover systems, once in place, in combination with the active gas system. The liner and cover systems would act as impermeable barriers that would prevent the migration of landfill gas while the active gas system imposes a vacuum on the waste mass.

The final cover system would consist of a 5.5-foot thick composite cap that will be designed in accordance with s. NR 504.07, Wis. Adm. Code. Final cover grades are shown on Plan Sheet 12 in the feasibility report. The composite cover system, from top down, is proposed to consist of the following layers:

- 0.5 foot topsoil,
- 2.5 feet rooting layer,
- Geocomposite drainage layer,
- 40 mil LLDPE, textured geomembrane,
- 2-feet compacted clay soil layer, and
- 0.5 foot grading layer.

OUTAGAMIE COUNTY NORTHWEST LANDFILL PROJECT SUMMARY AND ENVIRONMENTAL ANALYSIS

Proposed Soil Borrow Source

Clay and other soils for liner and cap construction would originate from within the footprint of the NWLF landfill. The onsite excavation is estimated to generate approximately 4,512,000 cubic yards of soil (excluding topsoil) present with approximately 2,256,000 cubic yards of soil material being liner quality clay. Approximately 953,000 cubic yards of material is needed for construction of the Northeast landfill final cover, and the NWLF clay liner and final cover. Material excavated from within the NWLF footprint that does not meet liner quality specifications may be utilized for cover soil during final cover construction of the NWLF and other associated features such as soil screening berms.

Proposed Operations

Daily cover used during waste placement would consist of native onsite clay or approved alternate daily cover (ADC) to cover the active disposal area. Intermediate cover would be placed on areas that remain open for more than 6 months without accepting waste, and on intermediate fill slopes between phases. The intermediate cover would consist of one foot of on-site soil, or an alternative approved intermediate cover material, and will be placed on slopes between 5% and 33%. Outagamie County has proposed interim waste grades that are 5% higher than final waste grades to allow for settlement prior to placement of the final cover. The interim waste grades consist of 3.8H:1V exterior slopes with a maximum elevation of approximately 890 feet MSL.

Proposed Physical Changes

Construction of the NWLF would alter about 80.7 acres for waste disposal and an approximate additional 16 acres for perimeter berms, roads, and stockpiles. The proposed NWLF is less than 1,000 feet from I-41 and WI Highway 441. Perimeter berms would be constructed around the active area of the landfill and along Highway 41 to screen waste filling operations. A 15-foot high litter screen would be installed along Highway 41 and French Road to prevent windblown debris. As filling progresses above the perimeter berm elevation, Outagamie County proposes to use core refuse berms constructed along the north and west outer slopes to screen waste filling operations. Once landfill operations are completed, the landfill final cover would be vegetated with grass to create a mounded open green space that is approximately 146 feet above the current ground level.

Modifying the existing topography is expected to alter the surface runoff from the NWLF area. During construction and operation, runoff will be diverted away from disturbed areas with drainage berms and ditches. Surface water runoff that contacts the eastern portion of the NWLF would be southeast, and then connect via piping to the storm sewer network that ultimately drains to the existing surface water sedimentation pond located directly south of the East Landfill (Sedimentation Pond 1). Surface water runoff that contacts the remaining portions of the NWLF would drain to the south via perimeter ditches and ultimately discharge into the proposed Sedimentation Pond 3, which would discharge via a ditch to the existing Sedimentation Pond 2 that ultimately discharges to the existing drainage swale to the south. The general drainage patterns of existing areas would not be significantly altered and is anticipated to be similar to current conditions.

The NWLF would use much of the existing infrastructure established for the existing Northeast landfill, including the existing office and scale. The proposed NWLF is not expected to significantly change the use of actively used existing buildings on site. Several storage buildings (part of a former farm operation) will be removed on the western edge of the proposed NWLF waste limits.

OUTAGAMIE COUNTY NORTHWEST LANDFILL PROJECT SUMMARY AND ENVIRONMENTAL ANALYSIS

Emissions and Discharges

Landfill Gas and Odors: Landfill gas from the decomposition of waste would be expected to be generated within the landfill. Landfill gas would be collected in an active gas collection system. Horizontal migration of landfill gas would not be expected to occur due to the presence of the composite liner system and active landfill gas extraction system. Gas monitoring probes would be installed around the NWLF to monitor for gas migration.

The control of odors would be achieved by cover soil placement and by an active gas collection system.

Leachate: Leachate would be generated when precipitation infiltrates the NWLF and percolates through the waste mass. Leachate from the NWLF would be collected in a leachate collection system and recirculated back into the waste mass or transported offsite for treatment.

Equipment Emissions, Dust and Windblown Waste: Emissions and discharges produced during the construction and operation of the NWLF would generally be consistent with the emissions and discharges from current landfill operations at the Northeast landfill.

Engine exhaust from diesel and gasoline powered vehicles and equipment would be discharged to the atmosphere. The discharge would vary depending on the number of vehicles or pieces of equipment in operation at a given time. Dust could be generated from onsite gravel roads and earthwork activities. Dust quantities would vary depending on the number of vehicles or equipment in operation, weather conditions, and the amount of exposed soil. Dust control measures would include application of water on the access and site roads during dry weather conditions.

Litter, including windblown paper, would be minimized by operational procedures including placement of daily cover. If needed, portable wind screens would be placed around the active filling area to aid in control of windblown debris. Litter collection would occur as needed.

Surface Water Management and Erosion Control: Construction and operation of the NWLF would not be expected to impact surface water. Precipitation that encounters waste would be contained by the composite liner system and associated perimeter and phase delineation berms placed around active fill areas. Waste contact water would be treated as leachate. The leachate collection system would route leachate to a storage tank where it can be discharged offsite for treatment or back onto the NWLF for recirculation. When leachate is not recirculated, it would be discharge offsite for treatment at a wastewater treatment facility via a sanitary sewer connection.

Erosion control features, or best management practices, would include, but not be limited to silt fence, surface water diversions, storm sewers, and sedimentation ponds.

Groundwater: A gradient control system may be installed if persistent seeps are observed at the subgrade elevation during construction of the liner to collect groundwater and effectively route it away from the bottom of the clay component of the liner. Groundwater would be pumped from the gradient control system until sufficient waste has been placed to offset the seepage flow into the liner. The collected groundwater would be discharged to the perimeter storm water ditch. The gradient control system would only be installed if needed during construction; otherwise, no groundwater from below the liner would be collected and pumped. Impacts to groundwater would not be expected from the proposed NWLF, since it would be constructed with a composite liner and final cover system after closure, and landfill leachate will be collected and disposed during operation and following closure of the landfill. Outagamie County would conduct routine monitoring of the groundwater around the

OUTAGAMIE COUNTY NORTHWEST LANDFILL PROJECT SUMMARY AND ENVIRONMENTAL ANALYSIS

NWLF during operation and after closure to monitor for any potential releases of contaminants from the landfill.

Noise: Noise would be generated from the operation of motorized equipment and vehicles. The intensity would vary based on the number of vehicles in operation and the activity. Noise would be controlled via maintenance of exhaust systems on landfill vehicles and equipment and core waste berms constructed around the active area of the NWLF.

Accumulative effects: The primary accumulative effect of the NWLF would be an increase in landfill gas and leachate generated on the property. If properly collected and treated, the gas and leachate should not have a significant impact on the surrounding environment; however, there may be some landfill gas emissions that may not be captured by the gas collection system. Landfill gas emissions would be limited by the landfill's air permit. If a leachate release were to occur, Outagamie County would be required to conduct a spill response and cleanup actions as necessary.

Environmental Monitoring

Environmental monitoring requirements would be established in a plan of operation approval issued by the department and would include the following:

Groundwater Monitoring: Groundwater monitoring would include 33 groundwater monitoring wells, including water table observation wells and piezometers around the perimeter of the NWLF, and five private water supply wells within 1,200 feet of the NWLF waste limits. Some of the groundwater monitoring wells are preexisting to the proposed NWLF and are being used as part of the sampling programs for one or more of the other landfills at the Facility. Four of the 33 groundwater monitoring wells would be for monitoring in accordance with Subtitle D of the Resource Conservation and Recovery Act (RCRA), which are Environmental Protection Agency (EPA) requirements. The monitoring parameters and frequency would be in accordance with ch. NR 507, Wis. Adm. Code.

Leachate Monitoring: Leachate monitoring would be performed at various monitoring points including the leachate pump buildings, collection tank, and leachate headwells. The number of leachate monitoring points would be further detailed in the plan of operation.

Surface Water Monitoring: There are no surface water bodies located immediately adjacent to the existing or proposed landfill area. Surface water samples will be collected from two of the existing sedimentation ponds and one new proposed sedimentation pond. Surface water sample collection would be performed at each sedimentation pond only when there is active discharge and will be consistent with current surface water sampling program for the East, West and Northeast landfills. In addition, storm water run-off monitoring would be performed in accordance with the Facility's SWPPP and WPDES Tier 2 Industrial Storm Water General Permit. This includes conducting quarterly visual inspections at storm water outfalls, non-storm water discharge monitoring, and an Annual Facility Site Compliance Inspection (AFSCI). In general, storm water inspections and monitoring involve observing storm water outfalls for signs of storm water contamination and verifying compliance with the BMPs highlighted in the SWPPP. As discussed previously, the current Tier 2 Industrial Site Storm Water WPDES Discharge Permit requires visual evaluation of non-storm water and storm water discharges. In addition, the department would request that total phosphorus be included in proposed sampling in addition to Total Suspended Solids (TSS) because the landfill is located in the Lower Fox Total Maximum Daily Load (TMDL) area.

Landfill Gas Monitoring: Landfill gas monitoring would be performed at various monitoring points including gas probes, gas extraction wells, surface emissions testing and the gas flares. The number of

OUTAGAMIE COUNTY NORTHWEST LANDFILL PROJECT SUMMARY AND ENVIRONMENTAL ANALYSIS

gas monitoring points would be further detailed in the plan of operation with monitoring requirements established in a plan of operation approval issued by the department.

Air Monitoring: Ambient air monitoring for particulates or other constituents is not proposed as part of the monitoring program. Ambient air monitoring requirements, if any, would be established through the air permitting process.

Unsaturated Zone Monitoring: The unsaturated zone (i.e. portion of the subsurface above the groundwater table) would be monitored via gas probes to check for the presence of subsurface landfill gas migration. No lysimeters, which are monitoring devices designed to extend underneath a landfill liner, are proposed to be installed due to the proposed liner consisting of a composite system, consistent with code provisions.

Fault Areas, Seismic Impact Zones and Unstable Areas

The NWLF is not located within 200 feet of a fault that has had displacement in Holocene time, and no known seismic impact zones, as defined in s. NR 500.03(208), Wis. Admin. Code, exist in Wisconsin. Therefore, the proposed NWLF meets the locational criteria of s. NR 504.04(3)(g), Wis. Admin. Code and s. NR 504(3)(h), Wis. Admin. Code.

The AGP indicated there is an approximate ½-foot thick discontinuous layer of peat present within the expansion area, within 5 feet of the proposed subbase grades. The peat layer will be removed during excavation for the subbase and replaced with compacted clay. This potential for the need to remove and replace subbase material is not considered a significant constraint on landfill development and is consistent with construction of the Northeast landfill. Subbase replacement material is readily available onsite and would not adversely affect landfill construction. No other unstable areas meeting the definition of s. NR 500.03(246), Wis. Admin. Code, are anticipated to be encountered resulting in the inability of the NWLF from meeting the locational criteria of s. NR 504.04(3)(i), Wis. Admin. Code.

Land Use Impacts

The proposed NWLF is located on property with existing landfills; therefore, use as the NWLF is consistent with current land use of the property. Areas surrounding the NWLF may be affected due to increased traffic, litter, odor, etc., but they are not anticipated to be significantly affected by the NWLF because operations for the NWLF will be similar to the Northeast landfill. The most significant impacts will be to the county owned dog park that is currently located on the southwest corner of the landfill property, which will need to be reduced in size or relocated as a result of the NWLF construction.

Traffic is not expected to change significantly as a result of the NWLF because operations will be similar to the currently active Northeast landfill. Traffic to the Facility increased in 2003 through 2005 due to increased waste loading to the Facility. Outagamie County modified the entrance in 2003 to accommodate this increased traffic to the Facility, which eliminated staging of traffic on Holland Road. At present no adverse land use impacts have developed under current traffic conditions, and none are expected when waste loading to the NWLF begins.

High-volume highway traffic passes within 200 feet of the Facility along the entire north side of the site on Highway 41. A 20-foot-tall litter fence and highway screening berm were constructed along the corridor, which blends many tree and landscape features. Litter management occurs on and off-site such that potential impacts are anticipated to be minimal. Similar litter management will be implemented during operation of the NWLF.

OUTAGAMIE COUNTY NORTHWEST LANDFILL PROJECT SUMMARY AND ENVIRONMENTAL ANALYSIS

Socioeconomic Impacts

The NWLF is not expected to result in any significant adverse social or economic impacts. Impacts from the NWLF on adjacent neighbors are expected to be similar to those from the existing Northeast, East, and West landfills.

The NWLF would not affect any cultural or ethnic groups because no ethnic or cultural groups are located near the NWLF. In addition, the NWLF would be screened from adjacent properties with vegetated earthen berms that would minimize noise and visual effects thereby minimizing socioeconomic impacts to adjacent landowners. Operating hours would remain the same as the current landfilling operations.

Outagamie County has noted residential and commercial development has continued in the area directly east of Holland Road during the time period the Northeast landfill has operated at the Facility. As a result of this growth in development, property values near the landfill have increased and Outagamie County anticipates property values surrounding the landfill will continue to increase.

The operation of the NWLF would contribute to the local economy as a source of tax base and employment. Furthermore, Outagamie County has indicated the proposed NWLF is consistent with Outagamie County's long-term strategic goals of providing citizens and businesses with environmentally sound solid waste disposal capacity. By providing a viable public solid waste sector, the community will benefit not only from the generation of jobs, but also a cost-based, non-profit operation.

Archeological Impacts

There are no known architectural, historical, or archaeological sites located within the proposed project area, which was confirmed by the State Historical Society of (see Appendix B-3 of the feasibility report).

Other Special Resources Impacts

There are no other state or local special resource areas that would potentially be affected by the NWLF development located within or near the site. The property is owned by Outagamie County for landfill development; therefore, the property cannot be considered prime agricultural land and an Agricultural Impact Statement is not needed.

Needs Analysis and Anticipated Site-life

The NWLF would serve as a regional landfill for the BOW, which has a service area consisting of Brown, Outagamie, and Winnebago County. As discussed previously, the Northeast landfill is the current regional landfill for the BOW service area. The time frame for when a new landfill would be needed within the region can be estimated by applying an average annual individual generation rate to the population within the service area. Based on annual tonnage data from the WDNR Landfill Tonnage Capacity Reports for 2015, 2016, and 2017 and population data from the Wisconsin Department of Administration from 2015, 2016, and 2017, the BOW service area generates on average 7.36 pounds per capita per day. Using this estimate and projected yearly increases in population in the service area, the Northeast landfill is anticipated to have a remaining site life of approximately 3 to 4 years. The BOW agreement currently stipulates the Brown County SLF will serve as the regional disposal facility when the Northeast landfill approaches capacity. Based on projected future increases in population, the Brown County SLF is expected provide landfill capacity for an additional 7 years

OUTAGAMIE COUNTY NORTHWEST LANDFILL PROJECT SUMMARY AND ENVIRONMENTAL ANALYSIS

before another regional landfill is needed. Assuming the Brown SLF will serve as the next regional landfill, a new landfill would not be needed for 9 to 10 more years.

The department has generally held that 7 years of existing service area capacity or less suggests a new landfill is needed, because it could reasonably take up to 7 years to site an alternative new landfill. The service area capacity in this case (with the Northeast Landfill and Brown County SLF) is greater than the 7-year timeframe.

Under this scenario, the proposed NWLF is expected to have a site of approximately 11 to 12 years. This was calculated using the proposed NWLF net design capacity of 9,032,513 tons, which takes into account loss of space from the placement of daily and intermediate covering (10 % of design capacity) and assumes a MSW density of 1,650 pounds per cubic yards.

However, there are several factors that will affect the needs and site life evaluation for the NWLF. The BOW is currently reviewing the Agreement to determine whether to utilize the NWLF as the next regional facility. If the NWLF were to be used as the next regional landfill, the new landfill would need to be constructed in 3 to 4 years, which would be within the 7-year timeframe. Furthermore, a letter dated May 6, 2019, from the directors of the BOW Solid Waste Planning group indicates the Brown County SLF and NWLF, if approved, may operate at the same time. The operation of both landfills at the same time would likely impact the anticipated disposal rate and service area for both landfills and in-turn affect the site life for each landfill. The department has requested Outagamie County conduct an evaluation of how both landfills operating at the same time may affect the needs and site life within the BOW service area.

The department will make a determination of need and anticipated site-life as part of the feasibility determination.

Summary of Unavoidable Adverse Impacts

The following adverse impacts from the NWLF cannot be avoided:

- Surface water impacts - Surface water runoff patterns and conditions will be altered due to development of the proposed NWLF but is expected to be minimized by the construction of surface water control features. Surface water discharges, however, would continue to remain in the Garners Creek-Fox River sub-watershed.
- Groundwater impacts - Groundwater levels and flow may be affected by the development of the landfill liner below the ground surface, which could result in altered groundwater flow patterns surrounding the landfill, though this is expected to have minimal adverse effect on the operation of the facility or adjacent property owners.
- Aesthetic impacts - Aesthetics will be impacted as a result of topography of the land being permanently altered by development of the proposed NWLF. The alteration will be consistent with the current land use of this property and visual impacts from highways will be screened by soil berms and established vegetation.

OUTAGAMIE COUNTY NORTHWEST LANDFILL PROJECT SUMMARY AND ENVIRONMENTAL ANALYSIS

- Wildlife impacts - Some wildlife species that may be present in the NWLF area will be displaced during landfilling operations; however, disturbed areas will be revegetated during the course of the project and a greenspace will be the final closure condition, which may allow wildlife to re-habitat the area.
- Odor impacts - Odors can periodically occur, but with the use of daily cover, minimizing the active waste disposal area, and operation of an active gas collection system, these occurrences are expected to be of limited duration and intensity.
- Other impacts - Truck traffic, dust, engine emissions, and noise associated with the NWLF would be extended for approximately 15 years. Individuals living around and near the NWLF would experience traffic, dust, noise, and emissions impacts similar to what they currently experience during operation of the existing Northeast landfill.

Alternatives to Landfilling

No Action: This alternative assumes the proposed NWLF would not be developed, which would avoid any adverse impacts from landfill expansion, but could potentially have other negative consequences. If the proposed NWLF is not developed, waste will then need to be directed to more distant landfills. This may be mitigated when the Brown Co SLF is constructed and ready to operate, which may result in the NWLF not being needed for at least a portion of that time.

Enlargement/ Reduction/ Modification: The proposed NWLF has been designed and will be operated to maximize waste disposal volume within the constraints of site conditions, regulatory requirements, and the environmental limitations.

Enlarging the proposed NWLF footprint is not feasible due to the physical constraints surrounding the area. To the east, the landfill limit of waste is constrained by the ATC electrical transmission line easement and the West Landfill. To the west, the waste limits are constrained by French Road. To the north, the landfill is constrained by the existing screening berm paralleling Highway-41. To the south, the NWLF is constrained by the West Landfill and the need for an area to provide storm water management.

Reducing the NWLF would result in a reduced landfill airspace for the BOW service area and would not maximize the full use of the property for its intended purpose. This would decrease the site life of the landfill and result in the need to site a new landfill sooner.

The design and planning of the NWLF has taken into account the site physical and environmental constraints, as well as regional economic factors. Therefore, modifying the proposed NWLF design would have only minimal effect toward mitigating impacts.

In summary, enlarging, reducing or modifying the proposed NWLF would not significantly change or reduce potential unavoidable impacts identified for construction of a new landfill on the property.

Other Landfills and Locations: The proposed NWLF facility is part of a comprehensive, integrated solid waste management plan for the BOW region as described in the BOW Agreement which specifies landfill site locations and sequences by county. Currently, the Northeast landfill is serving as the regional landfill and is projected to reach capacity in 2022-2023. Once the Northeast Landfill reaches capacity, the current BOW Agreement stipulates disposal will transition to the Brown County SLF.

OUTAGAMIE COUNTY NORTHWEST LANDFILL PROJECT SUMMARY AND ENVIRONMENTAL ANALYSIS

The existing permitted airspace at the Brown County SLF is estimated to provide approximately seven years of site life for the BOW system based on projected filling rates and size approved in the feasibility determination for the landfill. The BOW is currently evaluating whether both the Brown County SLF and the proposed NWLF should operate at the same time to accommodate waste disposal needs of the region.

To site and develop another landfill at a new location other than the Brown County SLF or NWLF would require significantly more investment from the BOW region as well as satisfying all the political, environmental and technical issues. Siting a landfill at a new and different location may not be completed in enough time to provide airspace needed once the Northeast Landfill reaches capacity.

Other Waste Management Methods: Alternative technologies are available for the management of solid waste, including recycling, composting, etc. However, many of these waste reduction and recycling technologies are mandated or voluntarily utilized in Wisconsin and within the service area. Furthermore, the economics of some of the options make them impractical. The waste reduction and recycling technologies generate residual waste which must be landfilled. The following are alternative methods evaluated by Outagamie County:

- Composting: There are three major material streams within MSW that can be readily composted: yard waste, food waste, and non-recyclable paper, each of which have their own levels of composting feasibility. As a result of state law, yard waste is currently not accepted for disposal at the Northeast landfill. In general, the most simple and feasible method of yard waste composting is to handle it as a separate composting system. Each of the BOW Counties typically utilizes local community yard waste drop-off/composting facilities. If delivered separately, wood waste such as brush and small branches are also generally allowed. A total of 26 local yard waste/wood waste drop off sites (including county solid waste facility locations) are available for residents of the BOW Counties.

Composting the organic waste portion of mixed MSW is not economically feasible at this time because of the characterization of the mixed waste stream, the cost of processing and the lack of identified markets for the grade of finished compost.

- Recycling: Presently, the BOW Counties have implemented recycling collection programs for traditional recyclable materials, including glass, metals, plastics, paper, and cardboard. Recycling coordinators for each responsible unit promote effective recycling, as required by state regulations. Communities within the service area operate or contract for curbside recycling collection programs as well as drop-off centers.

The BOW recycling system has grown substantially over the past 10 years or so and is expected to continue to mature with changing technologies and the evolving composition of the waste stream. But even the most optimistic projections of the growth of recycling indicate that this alternative will not replace the need for landfilling. The two waste management strategies complement each other. For example, even the materials recycling facility (MRF) has a residual stream of waste materials than cannot be recycled and must be landfilled.

- Waste-to-Energy and Other Resource Recovery Alternatives: Energy recovery through waste-to-energy systems and refuse-derived-fuel are technologies that can reduce the amount of waste landfilled. Development of a waste-to-energy facility could reduce some landfill impacts such as the aesthetics due to the topographic relief, odor and dust nuisances, potential groundwater flow pattern changes, volume of surface runoff, and potential erosion problems.

OUTAGAMIE COUNTY NORTHWEST LANDFILL PROJECT SUMMARY AND ENVIRONMENTAL ANALYSIS

However, lack of adequate energy markets, high capital and operational costs, environmental issues, zoning, public opposition, and implementation issues make these technologies not feasible for the BOW region and Outagamie County in particular.

- *Transfer Stations and Related Facilities:* The solid waste transfer facility is an integral part of the BOW's long-term solid waste management plan. Brown County and Winnebago County both operate facilities to transfer MSW to the Northeast landfill. There are two privately operated transfer stations within the service area. These facilities do not provide an alternative to landfilling, but rather provide a meaningful way to reduce haul costs and make the overall system as cost-effective as possible.

Construction and Demolition (C&D) waste, shingles and other bulky material, electronic waste, white goods, tires, metal, mattresses, yard waste, wood, used oil, oil filters, batteries, recyclable concrete, bricks, asphalt pavement chunks and other aggregates are all transferred or processed on-site for recycling and recovery.

Transfer facilities facilitate the efficient handling, management, transportation and recovery of various commodities but do not provide an exclusive alternative to landfilling of MSW. These other recycling services and programs at the overall facility complex are intended to complement the current Northeast landfill and MRF operations and provide "one-stop" service to the county and other residents and businesses.

- *Other Policy Alternatives and Economic Incentives:* Waste disposed of by landfilling might be further reduced using tax incentives, legislation regarding packaging, producer manufacturing requirements, and programs to alter consumer behavior in ways that reduce and recycle waste. All of these alternatives, except consumer behavior programs, are best implemented on the state and national level.

The private investment and development of alternatives to landfilling (e.g., recycling facilities, markets, and other resource recovery facilities) is, in part, affected by the cost of landfilling as represented by the established landfill tipping fees. In essence, landfills are a primary "competitor" to recovery options. Thus, the higher the landfill tipping fees, the more competitive the alternatives become. There may be an opportunity for the BOW region to consider imposing its own recovery landfill surcharge on top of existing tipping fees explicitly for the policy goal of encouraging waste reduction, recycling, and other forms of resource recovery. The additional funds could be used to help fund additional recycling and recovery programs and services (e.g., expanded community grants, resource recovery research and development projects, etc.). Of course, a competing objective is to keep the total landfill tipping fees as competitive as possible with other landfills. This landfill surcharge concept must be balanced with the current policy of keeping total landfill tipping fees as low as possible to provide the most cost-effective solid waste services possible for BOW region residents and businesses.

Summary of Issue Identification Activities:

Copies of the complete Feasibility Report and the Addenda have been sent to the clerks of the affected municipalities (village of Little Chute, city of Appleton, and the town of Grand Chute) and to the following public libraries: the Appleton Public Library (225 N Oneida Street, Appleton, WI 54911) and the Gerard H. Van Hoof Library (625 Grand Avenue, Little Chute, WI 54140). The same documents have been made available on the department's website

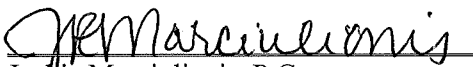
OUTAGAMIE COUNTY NORTHWEST LANDFILL
PROJECT SUMMARY AND ENVIRONMENTAL ANALYSIS

<http://dnr.wi.gov/topic/Waste/Comment.html> . A copy is also available by appointment at the Wisconsin Department of Natural Resources Green Bay Service Center at 2984 Shawano Ave, Green Bay, WI 54313 (contact Jackie Marciulionis at 920-662-5433 or jacqueline.marciulionis@wisconsin.gov).

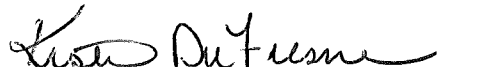
On July 8, 2019, the department determined the feasibility report for the proposed landfill expansion to be complete. A public notice to that effect is anticipated to be published in the *Wisconsin State Journal* and *Appleton Post Crescent* and posted on the department's web site on July 17, 2019. A 30-day public comment period will begin once the department posts the public notice on its internet site. This comment period will afford the public the opportunity to request an informational or contested case hearing in the matter of this proposal. Upon the completion of any hearing or within 90 days of the issuance of this completeness determination, the department will then issue a feasibility determination.

For Wisconsin Environmental Policy Act (WEPA) compliance under s. 1.11, Wis. Stats. and s. NR 150.35, Wis. Adm. Code, the department has determined that the landfill feasibility review and public input process for a proposed landfill expansion is an integrated analysis action under the provision of s. NR 150.20(2)7, Wis. Adm. Code. This project summary contains an environmental analysis of the proposed landfill expansion. The department has made a preliminary determination that an environmental impact statement is not needed under section 1.11, Wis. Stats.

If a favorable feasibility determination were made and a plan of operation were to be approved, site construction documentation and department inspections would occur throughout various phases of construction. A license to operate the facility as a municipal solid waste landfill would be issued following the department's approval of the site construction documentation report and proof of financial assurance. Outagamie County would also be required to obtain all other applicable federal, state and local permits or approvals for construction and operation of the landfill.


Jackie Marciulionis, P.G.
Hydrogeologist
Northeast Region

July 8, 2019
Date


Kristin DuFresne
Waste & Materials Management Program Supervisor
Northeast Region

July 8, 2019
Date